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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 20607WO	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/NL 03/00044	International filing date (day/month/year) 22.01.2003	Priority date (day/month/year) 28.01.2002
International Patent Classification (IPC) or both national classification and IPC C08F22/00		
Applicant DSM IP Assets B.V.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.  
  
☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).  
  
 These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:
  - I ☒ Basis of the opinion
  - II ☐ Priority
  - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
  - IV ☒ Lack of unity of invention
  - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
  - VI ☐ Certain documents cited
  - VII ☐ Certain defects in the international application
  - VIII ☐ Certain observations on the international application

Date of submission of the demand  07.08.2003	Date of completion of this report  24.06.2004
Name and mailing address of the international preliminary examining authority:   European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer  Siemens, T  Telephone No. +31 70 340-3642



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/NL 03/00044**

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17):*

**Description, Pages**

1-13 as originally filed

**Claims, Numbers**

1-12 as originally filed

**Drawings, Sheets**

1/2-2/2 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**IV. Lack of unity of invention**

1. In response to the invitation to restrict or pay additional fees, the applicant has:

- ☐ restricted the claims.  
☐ paid additional fees.  
☐ paid additional fees under protest.  
☒ neither restricted nor paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.  
☒ not complied with for the following reasons:

**see separate sheet**

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- ☐ all parts.  
☒ the parts relating to claims Nos. 1-8,11 .

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-8,11
	No: Claims	
Inventive step (IS)	Yes: Claims	1-8,11
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-8,11
	No: Claims	

2. Citations and explanations

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**see separate sheet**

**Re Item IV**

**Lack of unity of invention**

The International Examining Authority agrees with the International Searching Authority in that the present international application contains multiple (groups of) inventions, as follows:

**1. Claims: 1-8, 11**

Process and apparatus for the preparation of a copolymer of maleic anhydride and an alkyl vinyl ether

**2. Claims: 9, 10, 12**

Copolymers and modified copolymers of maleic anhydride and alkyl vinyl ether having a dispersity of less than 2.0

It is considered that the present application consists of multiple subject matter, as defined above.

The present application deals with a process for the preparation of copolymers of maleic anhydride and alkyl vinyl ether. This process is defined in claims 1-8. In claims 11 and 12, an apparatus for conducting this process is claimed. Furthermore, claims 9 and 10 define a maleic anhydride / alkyl vinyl ether copolymer and a modified copolymer, respectively.

According to the applicant, the object of the present application (p.1, l. 30-32) is to provide a process that exhibits a lower risk of a runaway reaction without the need of precharging the reactor with prepolymerised copolymer. P. 7, l. 33-35 states that a copolymer of a narrow molecular weight distribution (mwd) CAN be produced by this process. There is no indication that such a narrow mwd copolymer will inevitably be produced by the present process.

Thus, the common or corresponding technical features linking both subjects are copolymers consisting of maleic anhydride / alkyl vinyl ether comonomers. Such copolymers are already known, see for instance EP919577, the first citation of the search report. Therefore, all technical features which are common to the different technical subjects, as defined above, or have a corresponding function therein, are known, i.e. these features are not special technical features in the sense of Rule 30 EPC.

No other common or corresponding technical feature(s) - defining the contribution which each of the individual subjects makes over the prior art - could be defined.

Since the two subjects are not linked by special technical features, no single general inventive concept exists in the present case, i.e. the application lacks unity of invention.

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EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/NL 03/00044

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

Reference is made to the following documents:

D1: EP-A-0 919 577 (BASF AG) 2 June 1999 (1999-06-02)

**1. Novelty**

D1 discloses a process for the preparation of a copolymer of maleic anhydride and an alkyl vinyl ether.

There is however no mention of a continuous process and a loop reactor.

Hence the present application can be considered as being novel towards D1.

**2. Inventive step**

Since there is no hint in D1, which is considered to represent the closest prior art, to modify the process disclosed therein to the presently claimed process, the claims as presently on file can be considered as involving an inventive step.